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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/985,728
Filing Date: November 06, 2001
Appellant(s): CRANE ET AL.

Lawrence N. Crane et al.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/21/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-61 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,265,776	Gilleo	7-2001
00/56799	Torres-Filho et al.	9-2000
6,208,525	Imasu et al.	3-2001
6,168,972	Wang et al.	1-2001

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 18 is rejected under 35 U.S.C. 112, second paragraph. This rejection is set forth in a prior Office Action, mailed on 11/17/03.

Claims 1-3, 9-13, 17, 22-24, 49, 50, and 53-56 are rejected under 35 U.S.C. 102(e), second paragraph. This rejection is set forth in a prior Office Action, mailed on 11/17/03.

Claims 4-8, 14-16, and 18-21 are rejected under 35 U.S.C. 103(a), second paragraph. This rejection is set forth in a prior Office Action, mailed on 11/17/03.

Claims 25-48, 51, 52, and 57-61 are rejected under 35 U.S.C. 103(a), second paragraph. This rejection is set forth in a prior Office Action, mailed on 11/17/03.

(11) Response to Argument

Appellant contends that the phrase " Controllably degradable when exposed to appropriate conditions " points out and distinctly claims the invention and is definite

within the meaning of 35 U.S. C. 112, second paragraph. The examiner agrees with the appellant's rationale and withdraws the 112 second paragraph rejection.

Appellant contends that Gilleo fails to anticipate claims 1-3, 9-13, 17, 19-24, 49, 50, and 53-56 under 35 U.S. C. 102(e) because Gilleo discloses requires that the underfill material be a thermoplastic material, not a thermosetting material.

Gilleo teaches an underfill material 18 made of a thermoset (i.e. thermosetting material) having a very low crosslink density can be substitute for a thermoplastic (see col. 4 lines 30-34). Also, as stated by the appellant Gilleo in one embodiment has a thermosetting material included together with a thermoplastic material as an underfill. Appellant's claims do not recite that the thermosetting material is the only material in the underfill. Furthermore, in another embodiment, the underfill may also include a B-staged thermoset that will de-polymerize at an elevated temperature (see col. 6 lines 31-34).

Appellant contends that Gilleo fails to disclose curable materials. Gilleo teaches a curable material (i.e. thermosetting underfill material) that is capable of curing under heat to attach the chip to the circuit board (see col. 5 lines 65-67 and col. 6 lines 1-7). Once the thermosetting underfill material is in a cured state it will firmly bond the chip to the circuit board.

Appellant contends that Gilleo teaches away from the use of thermosets as the sole underfill material. Again, appellant claims do not recite that the thermosetting material is the sole underfill material. Thus, the examiner can view the thermosetting underfill material as a thermosetting material combined with a thermoplastic material or

a thermosetting material in a B-stage. In both cases, Gilleo discloses a thermosetting material combined with a thermoplastic material or a B-staged thermosetting material as a substitute for a thermoplastic material in an alternate embodiment(see col. 4 lines 30-34 and col. 6 lines 31-33). Since, Gilleo states an alternate embodiment where a thermosetting material is used as an underfill. The examiner has not ignored what Gilleo teaches away from working with a thermosetting material in one embodiment but bases the rejection on another embodiment that successfully utilizing thermosetting materials as an underfill material between a chip and a circuit board.

Appellant contends that the combination of Gilleo and Torres-Filho flies in the face of the disclosure of Gilleo since Gilleo teaches away from utilizing thermosetting materials and Torres-Filho discloses thermosetting underfill material. The combination of Gilleo and Torres-Filho is proper since Gilleo discloses a B-staged thermosetting material as a substitute for a thermoplastic material in an alternate embodiment (see col. 4 lines 30-34 and col. 6 lines 31-33). Thus, both Gilleo and Torres-Filho disclose thermosetting materials as an underfill material between a chip and a circuit board.

Appellant contends that Imasu fails in any way to teach or disclose a circuit chip in accordance with the present invention, which involves curable thermosetting underfill material disposed on a chip. Imasu is not relied upon to disclose this feature. Imasu is relied upon to show that it is well known to have a semiconductor chip made of silicon (see col. 4 lines 61-63). Gilleo is relied upon to disclose the curable thermosetting underfill material disposed on a chip.

Appellant contends that Wang does not involve dispensing a second thermosetting underfill composition on a first thermosetting underfill composition, let alone treating such compositions to render them non-flowable on the chip surface. The final product of Wang discloses a second thermosetting underfill composition 310 dispensed on a first thermosetting underfill composition 210 (see Figs. 8B). The final product allows both first and second thermosetting underfill compositions 210, 310 to be present on the chip die.

It is noted by the examiner that claim 57 is allowable over the prior art in independent form since the process step of dispensing a second thermosetting underfill composition flowable on the thermosetting underfill composition around the electrical contacts is not taught by any of the cited prior art. Claim 25 differs from Claim 57, which includes claim 55 and 54, since the prior art discloses the final product of claim 25 and the dispensing step is not recited in the claim.

For the above reasons, it is believed that the rejection should be sustained.

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AC/July 12, 2004

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